

ON A COLLECTION OF PARASITIC HYMENOPTERA
(CHIEFLY BRED), MADE BY MR. W. W. FROGGATT,
F.L.S., IN NEW SOUTH WALES, WITH DESCRIPTIONS
OF NEW GENERA AND SPECIES. PART I.

By P. CAMERON.

(Communicated by W. W. Froggatt.)

This paper may be looked upon as a continuation of one by the late Dr. Wm. H. Ashmead, published in the Society's Proceedings for 1900; and is of the same nature, dealing, as it does, with Parasitic Hymenoptera caught, and more particularly, bred by Mr. Walter W. Froggatt, F.L.S., the Government Entomologist. Some of the bred species may prove to be of economic importance, as, for example, *Opius tryoni*, reared from the Dipterous fruit-fly, *Dacus tryoni*. Of geographical interest is the occurrence in Australia of a species of *Philopsycha*, a genus hitherto known only from Ceylon, in which island it is to be found, it is to be noted, a species of the Australian genus *Lissopimpla*.

CRYPTINÆ.

ERYTHROMESOSTENUS, g.n.

Head wider than thorax, which is thrice longer than wide: parapsidal furrows distinct on the basal two-thirds. Scutellum hardly raised above mesonotum, the sides keeled to beyond the middle. Metanotum with distinct lateral spines, a transverse basal keel; metapleuræ with a complete keel, the spiracles small, longish-oval, areolet punctiform, open at apex, recurrent nervure received shortly beyond transverse cubital; transverse median almost interstitial; discocubital nervure roundly curved, unbroken; transverse median nervure in hind wings broken near middle. Post-

petiole broad, spiracles separated from each other by a greater distance than they are from the apex; abdomen entirely smooth; second segment as wide at apex as it is long. Legs long and particularly the hinder, tarsi longer than tibiæ, claws small; antennæ slender for the group, third joint a little longer than fourth.

Allied to *Mesostenoides*, *Skeatia*, and *Christolia*. It may be known by the red-coloured body, the smooth abdomen, the minute areolet, open at the apex, and by the transverse median nervure in the hind wings being broken in the middle, not distinctly below the middle as in the genera just mentioned. Red is an unusual colour in the Mesostenini.

ERYTHROMESOSTENUS RUFUS, sp.n.

♀. Rufous, antennæ black, scape rufous, 6th to 14th joints white; wings hyaline, stigma and nervures black, areolet punctiform, apical nervure obsolete; apex with a faint, narrow smoky border; transverse median nervure semi-interstitial; transverse median nervure in hind wings broken in the middle, sharply angled in the middle. Tips of mandibles black. Palpi dark red. Length, 8; terebra, 3 mm.

Wollongbar, Richmond River, N.S.W. Bred from "Fern-Moth larva."

Face roundly raised in middle, closely punctured there, sides smooth, separated from clypeus by a shallow furrow; clypeus closely finely punctured on upper half, smooth on lower. Malar space almost as long as antennal scape. Temples very short, rounded; occiput transverse. Metanotum smooth, parapsidal furrows deep, reaching from base to base of apical third. Scutellum smooth, sides strongly keeled to top of apical slope. Metanotum at the base to the keel; the rest closely reticulated, more strongly so towards apex, where, on the sides, they are stronger than in the middle and more longitudinal; spines short, thick, rounded. Propleuræ irregularly striated, smooth in middle above, striæ at base below stronger and more curved. Mesopleuræ strongly,

closely, irregularly reticulated, more strongly and obliquely at base above, the apex above smooth. Metapleuræ above strongly reticulated, above the keel the striæ are stronger and oblique; below the keel more finely and regularly reticulated; spiracles small, longish-oval. Abdomen smooth and shining; petiole becoming gradually widened to base of post-petiole, which is smooth, of equal width and a little wider than long.

PÆCILERYPTUS NIGRO-MACULATUS Caml., Ann. Mag. Nat. Hist. vii.(7), June, 1909, 528.

Near Inverell, N. S. W.; in September. Bred from reddish (*Eucalyptus*) berry-shaped galls (W. W. Froggatt).

I am not sure that *Pæcileryptus* can be referred to the *Cryptinæ*. The spiracles on the first abdominal segment are placed nearer the middle than they are in that group; the mesonotal and mesopleural furrows are shorter, and less clearly defined than in the typical *Cryptinæ*. The legs, too, and especially the hinder, are shorter and thicker, being more as they are in the *Pimplinæ*. From the latter, it differs in the basal abdominal segment being longer and more slender, with the spiracles placed nearer the middle. My present opinion is to refer it to the *Pimplinæ*, in or near the *Lissonolini*. The form of the abdomen, which is not compressed laterally, separates it from the *Ophionini*.

OPHIONINÆ.

LIMNERIUM BOMBYCIVORUM, sp.n.

♀. Black, legs entirely lemon-yellow, femora deeper in tint than tibiæ, palpi and tegulæ of a paler yellow colour, wings clear hyaline, stigma and nervures black; areolet absent; cubitus obliquely bent down from the transverse cubital; transverse median nervure received shortly beyond transverse basal. Head and thorax opaque, covered with short white pubescence; abdomen smooth, bare and shining. Length 7 mm.

Tasmania (A. Morton). A parasite on Bombyx larva.

Head wider than thorax, wide, sharply obliquely narrowed. There is a stout transverse keel on the base of the metanotum, roundly bent towards base in middle. Abdomen much more shining than thorax, and smoother. Metanotum more densely pilose than the rest of thorax.

LIMNERIUM TASMANIENSE, sp.n.

♀. Black, second and following segments of abdomen ferruginous, base of second segment narrowly, the sides more broadly black, second and third ventral segments yellowish, with black lateral spots; legs ferruginous like the abdomen, coxæ and basal joint of trochanters black, apical joint of the latter yellow, apex of hind tibiæ and of tarsal joints infuscated; wings hyaline, stigma and nervures fuscous, areolet appendiculated, pedicle a little shorter than first transverse cubital nervure, recurrent nervure received shortly beyond its middle. Length, ♂; terebra, 1 mm.

Hobart Town, Tasmania (A. M. Lea).

There are two curved keels on the base of the metanotum, forming almost semicircular areæ, but the keels on the outer side do not extend to the base of the metanotum. Head and thorax covered, not very densely, with a white pile. Abdomen broader than usual. Eyes converging only slightly above, hinder ocelli separated from each other by the same distance as they are from the eyes. Transverse median nervure received shortly beyond transverse basal.

HYMENOBOSMINA VERIMACULATA, sp.n.

♀. Yellowish-testaceous, abdomen more rufous in tint; a broad band, twice the width of the yellow orbital part, on front and vertex, slightly obliquely narrowed behind ocelli, occiput except at outer edges, a wide mark on basal half of mesonotum in the centre, a thinner one on sides, narrowed at apex to a fine point; scutellar depression, basal half of the narrowed base of first abdominal segment, a broad line down basal two-thirds of second segment and basal fourth of the

third black; wings hyaline, stigma and nervures black; recurrent nervure received at half the length of the transverse cubital beyond it; transverse median nervure interstitial; legs testaceous, tinged with rufo-fulvous, base of hind tibiæ, their apex more broadly, and hind tarsi blackish. Length, 10mm.

Medowie, New South Wales; in April. Parasite on "Case-Moth," *Thyridopteryx hübnéri* (W. W. Froggatt).

Head and thorax closely punctured, covered with a short white down; middle of metanotum closely transversely striated, more strongly in middle, this part being bordered almost by keels, forming an elongated area of equal width. Second abdominal segment closely longitudinally striated.

On the same card as the specimen described above is a male, which agrees with the female in the colouration of the head and thorax, except that the scutellum is surrounded with black; the metanotum entirely black, as are also the upper two-thirds of the mesopleuræ; an elongated conical spot on the base below, the base of the metapleuræ, narrowly above, more broadly below; the basal abdominal segment is entirely black, the second with the basal three-fourths above, almost the basal half of the third, and the apical two entirely black.

PIMPLINÆ.

PHILOPSYCHE PILOSELLA, sp.n.

♂. Black, densely covered with white hair, which is longer and denser on sides of scutellum and metathorax, and, to a less extent, on face, underside of antennal scape, tegulæ, a spot on pronotum in front of them, palpi and four front legs bright lemon-yellow; hinder trochanters, basal three-fourths of hind tibiæ, basal two joints of hinder tarsi except at apex, and apices of basal segments of abdomen broadly, whitish-yellow; band on second segment slightly and roundly incised in middle at base; third, fourth, and fifth, more widely and squarely incised in middle; second, third, and fourth, with a black spot on sides of the band; second with a triangular

yellow spot, at base laterally, of the same colour. Wings hyaline, iridescent, stigma and nervures black, areolet almost appendiculated in front, recurrent nervure received at apex; transverse median nervure interstitial. Length, 10mm.

Mittagong, N.S.W.; in January (W. W. Froggatt).

Head smooth, upper part of thorax closely punctured, except for a smooth space in middle of metanotum at base; pleuræ almost impunctate; abdomen, except the last segment, more strongly and quite as closely. Basal slope of first abdominal segment obliquely sloped, and margined on sides of slope, which is narrowed above.

This species is very similar in colouration and clothing of the body to the type of the genus, *P. albobalteata* Cam., from Ceylon, which is, as the name denotes, a parasite on the moth *Psyche*. The small black spot on the sides of the bands on the second to fourth segments is also present in the Ceylonese species, but the colouration of the legs in that is very different; and it is smaller.

BRACONIDÆ.

Braconinæ.

PLATYBRACON NIGRICEPS, n.sp.

♀. Rufo-luteous; antennæ, head, hinder tarsi, and sheath of ovipositor black; mandibles, except the tips, and tarsi rufo-testaceous; wings rufo-testaceous to near the transverse basal and transverse median nervure, dark fuscous beyond, except the greater part of the first cubital cellule, the blackish part in the apex of the latter being triangular; a small hyaline cloud running along outer part of stigma from the commencement of the black apical part to the radius; stigma yellowish-ochraceous, apical fourth black; third abscissa of the radius as long as the basal two united, second cubital cellule thrice longer than wide; recurrent nervure received in the apex of first cubital cellule. Central part of first abdominal segment and centre of lateral finely, closely striated; second, third, and fourth more strongly striated,

except on lateral basal area, which are smooth and bounded by crenulated furrows; first area the larger, and transversely triangular; second smaller, and more semicircular in shape; third still smaller. Sutureform articulation deep, crenulated; there are narrower, crenulated furrows near apex of third and fourth, the extreme apex being smooth. Length, 11; ovipositor, 8 mm.

Gin Gin, Queensland; on 13th October (W. W. Froggatt).

The plate below the antennæ is short, broad, rounded, and with a broad keel down the middle; the face is shagreened, depressed on either side of the middle. Face with a few long black hairs; oral region and lower part of head densely with longish white pubescence. Legs densely covered with white hair. Black cloud at base of transverse basal nervure roundly incised, before transverse median obliquely narrowed below.

BRACON FROGGATTII, sp.n.

♀. Black, shining, pro- and mesothorax with scutellum red, sides of first abdominal segment white; covered, especially above, with white pubescence, which is longer on thorax than on back of abdomen; legs black, densely covered with short white pubescence. Wings uniformly dark fuscous, stigma and nervures black: basal two abscissæ of radius united as long as third; second cubital cellule four times longer than wide; recurrent nervure interstitial. Length, 5; terebra, 1 mm.

Reedy Creek, near Inverell; in September (W. W. Froggatt).

First abdominal segment about thrice longer than wide, roundly curved, central black part of equal width; it is fully one-quarter longer than second, which is wider than long. It has a smooth keel, triangularly dilated at base on basal half; sutureform articulation distinct, crenulated and without a distinct apical lateral branch: it is the only furrow. Parapsidal furrows narrow but distinct, extending from base

to apex. Malar space two-thirds of length of eyes. Head narrower than eyes, temples obliquely narrowed.

BRACON EUCALYPTI, sp.n.

♂ ♀. Black; head, underside of antennal scape, prothorax, basal three abdominal segments, and the four front legs pale rufo-testaceous; wings hyaline, very iridescent, stigma and nervures black. Length, 3; terebra, 1mm.

Sydney. Bred from reddish galls on leaves of *Eucalyptus* sp. (W. W. Froggatt).

Smooth and shining, sparsely covered with white pubescence, legs more densely so than body. Apical abscissa of radius about one-third longer than the basal two united; recurrent nervure received in apex of first cubital cellule; second cubital cellule about thrice longer than wide. The colouration of the legs varies; the middle may be marked with black and the hinder with testaceous.

CHELONINÆ.

AREOGASTER ERYTHROPUS, sp.n.

♀. Black; scape of antennæ and legs red, hind coxæ black at base to shortly beyond middle; covered with a white pile which is longer and denser on metanotum; palpi pale testaceous; wings hyaline, costa pale testaceous, stigma and nervures black. Length, 5 mm.

Mittagong, N.S.W.; on 14th October (W. W. Froggatt).

Basal joint of flagellum obscure brown. Head closely distinctly, but not very strongly punctured, front and vertex less strongly than the face, which is separated from the clypeus by a rounded, clearly defined furrow. Thorax closely, distinctly punctured, apical half of mesonotum irregularly reticulated. Scutellum more strongly and less closely punctured than mesonotum; a row of deep foveæ, almost square, at the base. Abdomen alutaceous, base irregularly longitudinally striated.

CHELONUS MEGASPILUS, sp.n.

♀. Black ; a large white mark, about one-half longer than wide, sides straight, base and apex transverse, apex wider than base ; on basal third of abdomen ; legs red, coxæ and trochanters black ; wings highly iridescent, tinged with fuscous to the stigma, apex hyaline, stigma and nervures black. Length, 3 mm.

Tamworth, N.S.W. (W. W. Froggatt).

Antennæ longer than body, at least 33-jointed ; face closely, minutely punctured, clypeus more shining, clearly separated ; both are covered with short white pubescence. Mesonotum weakly, irregularly punctured, outer edge irregularly striated. Base of propleuræ smooth and shining, apex shagreened. Meso- and metapleuræ shagreened, irregularly reticulated. Mesosternum shining, punctured, the middle less strongly than sides. Abdomen shagreened, base irregularly striated.

METEORINÆ.*PROTELUS LUTENS*, sp.n.

♀. Luteous, abdomen paler in colour, antennæ infuscated beyond middle ; wings hyaline, stigma fuscous, paler at base, nervures black ; second cubital cellule narrowed slightly, but distinctly in front ; first abscissa of radius half the length of second. Face closely, minutely punctured, densely covered with short white pubescence ; front and vertex smooth and shining ; a semicircular depression, flat in centre, over each antenna. A shallow, finely rugosely punctured depression in middle of apical half of mesonotum, its base triangularly projecting at sides ; it is slightly, gradually narrowed towards apex : apex of mesonotum at sides smooth, shining and narrowed towards base. Scutellar depression large, deep, base rounded, middle with a keel, and with two short keels on either side at apex. Metanotum irregularly reticulated, more closely and regularly at apex, base with a keel down

middle. Abdomen smooth, post-petiole finely striated. Length, 5 mm.

Sydney, N.S.W. Bred from the larva of a moth, *Teara* sp. (W. W. Froggatt).

MICROGASTERINÆ.

APANTELES PHILÆAMPUS, sp.n.

♀. Black; basal two ventral segments pallid testaceous, legs rufous, coxæ, apex of hind femora narrowly, of hind tibiæ more broadly and hind tarsi, black; wings hyaline, nervures and stigma fuscous. First abdominal segment almost one-fourth longer than wide at apex; second a little more than one-half length of third. Metanotum in one example with a not very distinct keel down middle; it is probably not always defined. Sheath of ovipositor short, broad. Length, 3 mm.

Wattle Flat, N.S.W.; in January. "Bred from a caterpillar" (W. W. Froggatt).

Head shining, smooth, almost bare. Thorax above densely covered with white pubescence, which is denser and longer on metathorax. Mesonotum closely, distinctly punctured; scutellum gradually narrowed to a point. Metanotum more opaque, coarsely alutaceous, as are also, but less strongly, the basal two abdominal segments. Third abdominal segment a little shorter than first, fourth not quite one-half the length of third, and slightly shorter than second.

APANTELES SYDNEYENSIS, sp.n.

♀. Black; legs rufous-testaceous, base of middle coxæ, posterior entirely and apex of hind femora narrowly, black; apex of hind tibiæ infuscated. Wings hyaline, stigma and nervures pallid, testaceous. Antennæ almost fuscous. Metanotum coriaceous, opaque, not keeled. Basal two abdominal segments opaque, alutaceous, finely, irregularly, obscurely, longitudinally striated; first segment not much longer than it is wide at apex; second about one-half its length; third a little shorter than it. Ovipositor short. Length, 2 mm.

Head more shining than thorax which is opaque, mesonotum finely, closely, rugulosely punctured; scutellum more distinctly punctured, the punctures being more clearly separated. Metanotum more coarsely sculptured than any other part of the body.

Sydney. Bred from a small green caterpillar, perhaps a *Plusia*; in June (W. W. Froggatt). Cocoons longish-oval, clear white and covered with white hair. A chalcid hyperparasite was bred from the cocoons.

OPIINÆ.

OPIUS TRYONI, sp.n.

♂. Head, scape, basal joint of flagellum, and thorax rufo-luteous, the four front legs of a paler luteous colour, hind legs fuscous, coxæ paler, femora darker in tint; abdomen whitish, central part of first abdominal segment above and the others except narrowly at apex, black; wings clearly hyaline, iridescent, stigma fuscous, nervures blackish, first abscissa of radius one-fourth of length of second, which is a little longer than first transverse cubital nervure; recurrent nervure received near apex of first cubital cellule; first abscissa of cubitus roundly curved towards costa; second cubital cellule along the cubitus a little more than twice the length of second transverse cubital nervure. Length, 3 mm.

Narara, N.S.W.; in November. Bred from the pupæ of *Dacus tryoni*, a Dipterous fruit-fly.

This is the parasite bred out of the maggots of the Queensland fruit-fly infesting the berries of the White Ash (*Schizomeria ovata*) by Messrs. Gurney and Gallard, and figured and described by Gurney in the Agricultural Gazette of New South Wales, 1910, p. 428.

Antennæ almost double the length of the body, which is smooth, shining and almost bare. Clypeus clearly separated from face by a distinct, rounded furrow, which is widened and deepened on the lower edge. Tips of mandibles black. Parapsidal furrows deep, mesonotum trilobate. Metanotum

less shining than mesonotum; a stout keel down centre. Mesopleural furrows not very distinct, smooth. Antennæ at least 43-jointed, flagellum closely pilose. Both the basal two abdominal segments are longer than wide.

On the whole, this species agrees best with *Opius*, but it approaches *Biosteres* closely in the alar neuration. The relative size of the stigma, and the relative length of the abscissæ of the radius do not afford very definite generic characters. It is to be noted that the late Dr. W. H. Ashmead (These Proceedings, 1900, p. 357) records *Dia-chasma carpocapsæ*, Ashm., from New Zealand, as a probable parasite of *Dacus tryoni*.

EVANIIDÆ.

AULACINUS PALLIDICAUDIS, sp. n.

♂ ♀. Black; antennæ, apex of the four front femora, four front tibiæ, and tarsi, rufo-testaceous; middle joints of flagellum paler, more yellowish in colour; base of hind tibiæ and apex more narrowly, rufo-testaceous, as are also, except at apex, the mandibles; wings hyaline, iridescent, apex with a narrow smoky border, stigma and nervures black; second transverse cubital nervure paler than the others, second recurrent nervure received very shortly beyond it, third at a greater distance before first; first abscissa of radius with a steep, oblique slope, and a little shorter than third, second shorter than either. Sheaths of ovipositor pale fulvous, darker at base. Length, 8; terebra, 7 mm.

Head smooth, opaque, wider than thorax, temples a little longer than eyes, rounded behind; occiput rounded. Hinder ocelli separated from eyes by one-half more than from each other. Third joint of antennæ a little shorter than the fourth. Palpi testaceous, basal joints blackish. Mesonotum and scutellum irregularly reticulated, the former more strongly towards apex; parapsidal furrows distinct, straight, oblique; striæ on scutellum transverse, an opaque, non-striated space on middle of apex. Metanotum in centre

alutaceous, sides with curved striæ; the rest closely reticulated, more finely on sides of metapleuræ. Pro- and mesopleuræ opaque, finely rugose, a clearly defined striated band down apex of propleuræ, bounded by keels at base and apex; reaching to shortly below the middle; a similar, but wider band down apex of mesopleuræ, with the striæ longer and more widely separated, and bounded behind by a keel. Abdomen smooth, first segment longer than the others united, curved, becoming gradually dilated, obliquely upwards towards apex; ovipositor nearly as long as body.

Comes near to *A. planiceps*, Szep., and *A. biroi*, Szep.; the former has the sheaths of the ovipositor black: the latter has them whitish only before the end, and the base of the abdomen is red.

Rose Bay, Sydney. Bred by Mr. W. W. Froggatt, from the larva of *Piesarthrius marginellus*. *Aulacus apicalis*, Westw., is a parasite of the same species (*cf.* W. H. Ashmead, These Proceedings, 1900, p. 348).

AULACUS FUSCICORNIS, sp.n.

♀. Black; antennæ fuscous; legs except the hind coxæ, and abdomen except base above and sides to below the middle, red, the black only on the narrowed part; wings clear hyaline, nervures and stigma black; third abscissa of radius a little longer than second; second recurrent nervure received almost in middle of cellule; second transverse cubital nervure widely bullated. Length, 6; terebra, 7 mm.

Sydney. Bred from the larva of a Longicorn beetle (W. W. Froggatt).

Antennæ as long as head and thorax united, stout, basal two joints red, third about one-quarter longer than fourth. Front opaque, punctured, more or less reticulated; vertex finely, closely, transversely striated at ocelli; sides at ocelli almost impunctate, the rest punctured, but not closely, the punctures being clearly separated. Mesonotum transversely rugosely reticulated, the longitudinal striæ finer than the

transverse. Scutellum rather strongly transversely striated; post-scutellum finely transversely striated. Base of metanotum depressed, and with some longitudinal striæ; the rest irregularly reticulated. Base of propleuræ opaque, closely irregularly reticulated, the rest aciculated, irregularly punctured, the depressed central part rather strongly striated below. Upper part of mesopleuræ closely, irregularly reticulated and aciculated, the rest obliquely striated, more widely below than above. Metapleuræ closely irregularly punctured above, base above middle with a smooth oblique, shining space, the rest obliquely. Closely reticulated-striated.